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EXAMINER	
MARTINEZ, CARLOS A	
ART UNIT	**PAPER NUMBER**
2853	

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,053	KING ET AL.	
	Examiner	Art Unit	
	Carlos A. Martinez	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19,21-27,30-36,38-47,49,50,52-79,82-87 and 91-96* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19,21-27,30-36,38-47,49,50,52-79,82-87 and 91-96* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

The corrections to the specifications were received on 06/21/2006, and it is noted that these corrections are acceptable.

Claim Objections

1. Claim 33 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 33 recites a block of intermediate transfer material; however, this does not provide further limitation to the parent claim (claim 1), which recites a block of intermediate transfer material that is solid. In response to applicant's arguments, the objection still stands because claim 1 states "a solid block of intermediate transfer material", and as a block of intermediate transfer material is recited and exists in claim 1, it therefore already serves as a part of the limitations to the apparatus being claimed as the invention. Claim 33 does not provide further limitations to the stated limitations for the apparatus, and therefore is not further limiting.

2. Claim 51 does not exist in the application. **If further correspondence is sought, after this action, the numbering of claims will be referred to as in accordance to 37 CFR 1.126** because the numbering of claims as currently presented and examined is not in accordance with 37 CFR 1.126. It should be noted that when claims are canceled, the remaining claims must not be renumbered. Since claim 51 does not exist in this application, when new claims are presented

or referred to in future correspondence, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 52-96 will be renumbered 51-95 in future correspondence with respect to this application; however, with respect to this action, the arguments will be discussed utilizing the old numbering.

3. Due to the cancellation of claim 37, claims 38-47 and 91-94 are objected to because of the following informalities: claims 38-47 and 91-94 are improperly dependent on claim 37. Claims 38-47 and 91-94 will be examined (in this office action) as claiming dependency on claim 36. Appropriate correction is required.

4. Further, due to the cancellation of claim 37, claims 38-47 are objected to because of the following informalities: The statement "the outer layer" should be corrected to "an outer layer". Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Askren (US6935734), Titterington (US5645888), and Korem (US6354701B2).

- Jones discloses a printing apparatus for applying a marking material to a final substrate (Fig. 1) with an intermediate transfer member (Fig.1, element 14), an intermediate transfer material applicator (Fig. 1, element 16) to form a molten layer of intermediate transfer material (refer to element 12 of Fig. 3 and lines 38-52 of column 9), a marking material applicator (Fig. 1, element 11), and a transferring apparatus – which includes a transferring roller (Fig. 1, element 22) – to transfer the imagewise pattern of marking material to a final substrate (Fig. 1 and lines 3-23 of column 7).
- Though Jones teaches an intermediate transfer material applicator, Jones fails to teach an intermediate transfer material applicator that is a solid block. Askren teaches a solid block of intermediate transfer material applicator (refer to element 60) that is used to form an intermediate transfer material layer (refer to lines 61-67 of column 7; and lines 1-3 of column 8) on an intermediate transfer member (refer to element 40). Jones (as modified by Askren) teaches the transferring of a quantity of the intermediate transfer material to the final recording substrate; however, Jones (as modified by Askren) fails to teach a curing station for curing of the intermediate transfer material on the final substrate. Titterington teaches the curing of the intermediate transfer material on the final substrate (refer to lines 1-11 of column 6, lines 1-11 of column 9, and lines 36-48 of column 10). Further,

though Titterington teaches the curing of the intermediate transfer material on the final substrate, a curing by means of a curing station is not specifically mentioned – though this would be obvious to one skilled in the art in order to provide curing. Nevertheless, Korem teaches a curing station for curing purposes (refer to element 218 of Fig. 6 and lines 49-53 of column 11).

- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus, as taught by Jones, with an intermediate transfer material applicator that is a solid block, the transferring of a quantity of the intermediate transfer material to the final recording substrate, and a curing station to cure at least one reactive material in the intermediate transfer material on the final substrate, as taught by Askren, Titterington, and Korem, for the purpose of providing an alternate means of firmly applying an intermediate material layer and providing curing as known to those skilled in the art.

7. Claims 1-5, 7-9, 12, 14-19, 28, 30, 32, 34, 35, 57-59, 61-62, 72-74, 77-79, 82, 84, and 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Titterington (US5645888), and Korem (US6354701B2).

- Jones discloses a printing apparatus for applying a marking material to a final substrate (Fig. 1) with an intermediate transfer member (Fig.1, element 14), an intermediate transfer material applicator (Fig. 1, element 16) to form a molten layer of intermediate transfer material (refer to element 12 of Fig. 3 and lines 38-52 of column 9), a marking material applicator (Fig. 1, element 11), and a

transferring apparatus – which includes a transferring roller (Fig. 1, element 22) – to transfer the imagewise pattern of marking material to a final substrate (Fig. 1 and lines 3-23 of column 7).

- Though Jones teaches an intermediate transfer material applicator, Jones fails to teach an intermediate transfer material applicator that is a solid block. Fujishiro teaches a solid block of intermediate transfer material applicator (refer to element 31 of Fig. 1B and lines 32-35 of column 5) that is used to form an intermediate transfer material layer (refer to lines 40-41 of column 5) on an intermediate transfer member (Fig. 1B, element 10B). Jones (as modified by Fujishiro) teaches the transferring of a quantity of the intermediate transfer material to the final recording substrate; however, Jones (as modified by Fujishiro) fails to teach a curing station for curing of the intermediate transfer material on the final substrate. Titterington teaches the curing of the intermediate transfer material on the final substrate (refer to lines 1-11 of column 6, lines 1-11 of column 9, and lines 36-48 of column 10). Further, though Titterington teaches the curing of the intermediate transfer material on the final substrate, a curing by means of a curing station is not specifically mentioned – though this would be obvious to one skilled in the art in order to provide curing. Nevertheless, Korem teaches a curing station for curing purposes (refer to element 218 of Fig. 6 and lines 49-53 of column 11).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus, as taught by Jones, with an intermediate transfer material applicator that is a solid block, the transferring of a

quantity of the intermediate transfer material to the final recording substrate, and a curing station to cure at least one reactive material in the intermediate transfer material on the final substrate, as taught by Fujishiro, Titterington, and Korem, for the purpose of providing an alternate means of firmly applying an intermediate material layer and providing curing as known to those skilled in the art.

Further, with respect to claim 2, it would have been obvious to one having skill in the art at the time of the invention was made to modify the device of Jones with Fujishiro to provide a holder for holding a block of intermediate transfer material in contact with the intermediate transfer member, as taught by Fujishiro (refer to element 30B and 32B of Fig. 1B and lines 32-35 of column 5), for the purpose of providing a secure housing for the block of intermediate transfer material.

Further, with respect to claim 3, it would have been obvious to one having skill in the art at the time of the invention was made to modify the device of Jones with Fujishiro to provide for movement between an engaged and disengaged position, as taught by Jones (refer to lines 37-38 and lines 48-51 of column 6), as regards a holder, as taught by Fujishiro, for the purpose of providing on-demand application.

Further, with respect to claim 4, it would have been obvious to one having skill in the art at the time of the invention was made to modify the device of Jones with Fujishiro to have a block of intermediate transfer material in the holder in contact with an intermediate transfer material, as

taught by Fujishiro (refer to lines 35-38 of column 5), when in the engaged position, as taught by Jones (refer to lines 37-38 and lines 48-51 of column 6), for the purpose of providing application of the intermediate transfer material during engagement.

Further, with respect to claim 5, it would have been obvious to one having skill in the art at the time of the invention was made to modify the device of Jones with Fujishiro to include a retractor for movement between an engaged and disengaged position, as taught by Jones (refer to lines 37-38 of column 6), as regards a holder, as taught by Fujishiro, for the purpose of providing on-demand application.

With respect to claim 7, Jones teaches a heater to heat the intermediate transfer member to a temperature of at least about 40°C (refer to element 19 of Fig. 1 and lines 45-65 of column 9).

With respect to claim 8, Jones teaches that the heater could heat the intermediate transfer member to a temperature of at least about 50°C (refer to element 19 of Fig. 1 and lines 45-65 of column 9).

With respect to claim 9, Jones teaches that the heater could heat the intermediate transfer member to a temperature of at least about 60°C (refer to element 19 of Fig. 1 and lines 45-65 of column 9).

With respect to claim 10, Jones teaches that the applicator can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of at least about 0.05 micron (refer to lines 37-44 of column 8).

With respect to claim 11, Jones teaches that the applicator can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of at least about 0.1 micron (refer to lines 37-44 of column 8).

With respect to claim 12, Jones teaches that the applicator can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of at least about 1 micron (refer to lines 37-44 of column 8).

With respect to claim 14, Jones teaches that the applicator can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of no more than about 50 microns (refer to lines 37-53 of column 8).

With respect to claim 15, Jones teaches that the applicator can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of no more than about 10 microns (refer to lines 37-53 of column 8).

With respect to claim 16, Jones teaches a substrate heater that is situated to heat the final recording substrate prior to transfer of the imagewise pattern of marking material thereto (refer to element 21 of Fig.1 and lines 53-65 of column 9).

With respect to claim 17, Jones teaches that the substrate heater heats the final recording substrate prior to a temperature of a least about 60°C (refer to element 21 of Fig.1 and lines 53-65 of column 9).

With respect to claim 18, Jones teaches that the substrate heater heats the final recording substrate prior to a temperature of a least about 65°C (refer to element 21 of Fig.1 and lines 53-65 of column 9).

With respect to claim 19, Jones teaches a blade for metering the molten layer of intermediate transfer material on the intermediate transfer member to a substantially uniform thickness (refer to element 18 of Fig.1 and lines 52-55 of column 6).

With respect to claims 21-26, Jones as modified by Fujishiro teaches the transferring of a quantity of the intermediate transfer material to the final recording substrate; however, they fail to teach a curing station for curing of the intermediate transfer material on the final substrate. Titterington teaches the curing of the intermediate transfer material on the final substrate (refer to lines 1-11 of column 6, lines 1-11 of column 9, and lines 36-48 of column 10). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to

modify the printing apparatus of Jones as modified by Fujishiro for the curing of the intermediate transfer material on the final substrate, as taught by Titterington, for the purpose of improved image quality. Further with respect to Titterington, Titterington teaches the use of ultraviolet radiation, infrared radiation, visible light, or e-beam radiation for curing. Therefore, it would further be obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones as modified by Fujishiro for the curing of the intermediate transfer material on the final substrate by means of radiation – such as ultraviolet, infrared, visible light, or e-beam, as taught by Titterington, for the purpose of improved image quality and effective curing. Though Jones as modified by Fujishiro and Titterington teaches the curing of the intermediate transfer material on the final substrate, a curing by means of a curing station is not mentioned – though this would be obvious to one skilled in the art in order to provide curing. Korem teaches a curing station for curing purposes (refer to element 218 of Fig. 6 and lines 49-53 of column 11). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones as modified by Fujishiro and Titterington would allow the transferring of a quantity of the intermediate transfer material to the final recording substrate and a curing station to cure at least one reactive material in the intermediate transfer material on the final substrate, as taught by Korem, for the purpose of improved image quality.

With respect to claim 26, official notice is made that it is known that the range of ultraviolet extends to encompass the low-energy x-rays. Therefore, since no specific range of x-ray is set forth or disclosed by the applicant, the use of x-ray (in claim 26) is rejected along with claim 22.

With respect to claims 30 and 82,

- Jones (as modified by Fujishiro and Titterington) teaches an apparatus wherein the marking material applicator applies an ink material.
- However, Jones (as modified by Fujishiro and Titterington) does not specifically mention that the marking material applicator employs a thermal ink jet printing process.
- Korem teaches a marking material applicator that employs a thermal ink jet printing process (refer to lines 33-47 of column 12).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones (as modified by Fujishiro and Titterington) with a marking material applicator that employs a thermal ink jet printing process, as taught by Korem, for the purpose providing a means of providing on demand ink application to a surface using thermal energy. Further, *the printing process of claim 82 is rejected based on the functions provided by the apparatus.*

With respect to claim 32, Jones teaches an intermediate transfer member that is a drum (refer to element 14 of Fig. 1).

Further, with respect to claim 34, it would have been obvious to one having skill in the art at the time of the invention was made to modify the device of Jones with Fujishiro or to include a block

of intermediate transfer material that has at least one surface that substantially conforms in shape to that of the intermediate transfer member, as taught by Fujishiro (refer to element 31B of Fig. 1B), for the purpose of providing conformal coverage and application on an intermediate transfer member.

Further, with respect to claim 35, it would have been obvious to one having skill in the art at the time of the invention was made to modify the device of Jones with Fujishiro to include a biasing mechanism to maintain contact between the block of intermediate transfer material and the intermediate transfer member as the block is consumed, as taught by Fujishiro (refer to element 33B of Fig. 1B), for the purpose of providing continuous coverage, as needed, to the intermediate transfer member as the intermediate transfer material is being expended.

With respect claims 57-59, 61-62, 72-74, 77-79, 84, and 87, *the printing process is rejected based on the functions provided by the apparatus.*

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 1 above, and further in view of Hattler (US3941085).

- Jones (as modified by Fujishiro, Titterington, and Korem) teaches an intermediate transfer material applicator that is mounted with a pressurized spring for moving the intermediate transfer material.

- But, Jones (as modified by Fujishiro, Titterington, and Korem) does not specifically mention that the transfer member can be moved into and out of contact with the intermediate transfer member – though pressurization of the spring would allow that capability and, thus, sufficiently meet the claimed criteria.
- Nevertheless, Hattler teaches an applicator of transfer material that can be moved into and out of contact with an object for applying transfer material (refer to element 46 and 68 of Fig. 2 and lines 9-27 of column 6).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones (as modified by Fujishiro, Titterington, and Korem) with an intermediate transfer material applicator that is mounted so that the block of intermediate transfer material can be moved into and out of contact with the intermediate transfer member, as taught by Hattler, for the purpose of regulating the application of transfer material.

Also, claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Askren (US6935734), Titterington (US5645888), and Korem (US6354701B2), as applied to claim 1 above.

- Jones (as modified by Titterington and Korem) teaches an intermediate transfer material applicator; however, Jones (as modified by Titterington and Korem) fails to specifically mention where the intermediate transfer material applicator is mounted so that the block of intermediate transfer material can be moved into and out of contact with the intermediate transfer member.

- Nevertheless, Askren teaches where the intermediate transfer material applicator is mounted so that the block of intermediate transfer material can be moved into and out of contact with the intermediate transfer member (refer to lines 41-64 of column 8; lines 1-65 of column 10).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones (as modified by Titterington and Korem) with an intermediate transfer material applicator that is mounted so that the block of intermediate transfer material can be moved into and out of contact with the intermediate transfer member, as taught by Askren, for the purpose of regulating the application of transfer material.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 1 above, and further in view of Bui (US5389958).

- Jones (as modified by Fujishiro, Titterington, and Korem) teaches that the applicator can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a certain thickness.
- But, Jones (as modified by Fujishiro, Titterington, and Korem) does not specifically mention a thickness of no more than about 60 microns – though mention of a thickness of about 50 microns in Jones (refer to lines 37-53 of column 8) would sufficiently meet the criteria range.

- Nevertheless, Bui teaches an applicator that can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of no more than about 60 microns (refer to lines 38-55 of column 5).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones (as modified by Fujishiro, Titterington, and Korem) with an applicator that can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of no more than about 60 microns, as taught by Bui, for the purpose of improved image quality.

10. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 1 above, and further in view of Shinkoda (US20030038871).

- Jones (as modified by Fujishiro, Titterington, and Korem) teaches the transferring of a quantity of the intermediate transfer material to the final recording substrate and a curing station to cure at least one reactive material in the intermediate transfer material on the final substrate
- But, Jones (as modified by Fujishiro, Titterington, and Korem) does not specifically teach the use of heat as the radiation for curing.
- Shinkoda teaches the use of heat as the radiation for curing (refer to paragraph 0067 of page 6).

- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones (as modified by Fujishiro, Titterington, and Korem) for the use of heat as the radiation for curing, as taught by Shinkoda, for the purpose of improved image quality and having an alternative means of curing.

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 1 above, and further in view of Komatsu (US6059407).

- Jones (as modified by Fujishiro, Titterington, and Korem) teaches an apparatus wherein the marking material applicator applies an ink material.
- However, Jones (as modified by Fujishiro, Titterington, and Korem) does not specifically mention that the marking material applicator that employs a piezoelectric ink jet printing process.
- Komatsu teaches a marking material applicator that employs a piezoelectric ink jet printing process (refer to lines 4-6 of column 4).
- Therefore, it would have been obvious to one having skill in the art at the time of the invention was made to modify the device of Jones (as modified by Fujishiro, Titterington, and Korem) to include a marking material applicator that employs a piezoelectric ink jet printing process, as taught by Komatsu (refer to lines 4-6 of column 4), for the purpose of providing an alternative printing process which utilizes piezoelectric elements to apply ink rather than heating elements.

12. With respect claim 33, no further limitation has been recited for the printing apparatus. Therefore, since no further limitation has been made with respect to the printing apparatus, particularly the mentioned block of intermediate transfer material, the claim is rejected along with the parent claim (claim 1).

13. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Askren (US6935734), Hanna (20040059046), Titterington (US5645888), and Korem (US6354701B2).

- Jones discloses a printing apparatus for applying a marking material to a final substrate (Fig. 1) with an intermediate transfer member (Fig.1, element 14), an intermediate transfer material applicator (Fig. 1, element 16) to form a molten layer of intermediate transfer material (refer to element 12 of Fig. 3 and lines 38-52 of column 9), a marking material applicator (Fig. 1, element 11), and a transferring apparatus – which includes a transferring roller (Fig. 1, element 22) – to transfer the imagewise pattern of marking material to a final substrate (Fig. 1 and lines 3-23 of column 7).
- Though Jones teaches an intermediate transfer material applicator, Jones fails to teach an intermediate transfer material applicator that is a solid block. Askren teaches a solid block of intermediate transfer material applicator (refer to element 60) that is used to form an intermediate transfer material layer (refer to lines 61-67 of column 7; and lines 1-3 of column 8) on an intermediate transfer member

(refer to element 40). Jones (as modified by Askren) teaches the use of an intermediate transfer material that is a solid that can be applied to a transfer material whether by thinning, liquefaction, abrasion, etc (refer to paragraphs [0121] and [0122] in Askren); however, Jones (as modified by Askren) does not specifically mention a transfer material having a melting point of at least about 30°C and no more than about 90°C. It should be noted though that the reference in Askren would sufficiently meet applicant's criteria for a melting point range. Nevertheless, Hanna teaches a transfer material having a melting point of at least about 30°C and no more than about 90°C (refer to abstract and paragraphs [0036], [0048], and [0049]). Also, Jones (as modified by Askren) teaches the transferring of a quantity of the intermediate transfer material to the final recording substrate; however, Jones (as modified by Askren) fails to teach a curing station for curing of the intermediate transfer material on the final substrate. Titterington teaches the curing of the intermediate transfer material on the final substrate (refer to lines 1-11 of column 6, lines 1-11 of column 9, and lines 36-48 of column 10). Further, though Titterington teaches the curing of the intermediate transfer material on the final substrate, a curing by means of a curing station is not specifically mentioned – though this would be obvious to one skilled in the art in order to provide curing. Nevertheless, Korem teaches a curing station for curing purposes (refer to element 218 of Fig. 6 and lines 49-53 of column 11).

- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus, as taught by Jones, with an

intermediate transfer material applicator that is a solid block, the transferring of a quantity of the intermediate transfer material to the final recording substrate, and a curing station to cure at least one reactive material in the intermediate transfer material on the final substrate, as taught by Askren, Hanna, Titterington, and Korem, for the purpose of providing an alternate means of firmly applying an intermediate material layer and providing curing as known to those skilled in the art.

Further, with respect to claim 36, the printing process is rejected based on the functions provided by the apparatus.

Also, claims 36-55, 65-71, 83, and 92-95, are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Hanna (20040059046), Titterington (US5645888), and Korem (US6354701B2).

- Jones discloses a printing apparatus for applying a marking material to a final substrate (Fig. 1) with an intermediate transfer member (Fig.1, element 14), an intermediate transfer material applicator (Fig. 1, element 16) to form a molten layer of intermediate transfer material (refer to element 12 of Fig. 3 and lines 38-52 of column 9), a marking material applicator (Fig. 1, element 11), and a transferring apparatus – which includes a transferring roller (Fig. 1, element 22) – to transfer the imagewise pattern of marking material to a final substrate (Fig. 1 and lines 3-23 of column 7).

- Though Jones teaches an intermediate transfer material applicator, Jones fails to teach an intermediate transfer material applicator that is a solid block. Fujishiro teaches a solid block of intermediate transfer material applicator (refer to element 31 of Fig. 1B and lines 32-35 of column 5) that is used to form an intermediate transfer material layer (refer to lines 40-41 of column 5) on an intermediate transfer member (Fig. 1B, element 10B). Jones (as modified by Askren) does not specifically mention a transfer material having a melting point of at least about 30°C and no more than about 90°C; however, Hanna teaches a transfer material having a melting point of at least about 30°C and no more than about 90°C (refer to abstract and paragraphs [0036], [0048], and [0049]). Also, Jones (as modified by Fujishiro) teaches the transferring of a quantity of the intermediate transfer material to the final recording substrate; however, Jones (as modified by Fujishiro) fails to teach a curing station for curing of the intermediate transfer material on the final substrate. Titterington teaches the curing of the intermediate transfer material on the final substrate (refer to lines 1-11 of column 6, lines 1-11 of column 9, and lines 36-48 of column 10). Further, though Titterington teaches the curing of the intermediate transfer material on the final substrate, a curing by means of a curing station is not specifically mentioned – though this would be obvious to one skilled in the art in order to provide curing. Nevertheless, Korem teaches a curing station for curing purposes (refer to element 218 of Fig. 6 and lines 49-53 of column 11).

- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus, as taught by Jones, with an intermediate transfer material applicator that is a solid block, the transferring of a quantity of the intermediate transfer material to the final recording substrate, and a curing station to cure at least one reactive material in the intermediate transfer material on the final substrate, as taught by Fujishiro, Titterington, and Korem, for the purpose of providing an alternate means of firmly applying an intermediate material layer and providing curing as known to those skilled in the art.

With respect to claim 37, Jones discloses a process where the transferring of the marking material from the intermediate transfer member to the final recording substrate transfers a quantity of the intermediate transfer material to the final recording substrate (refer to lines 66-67 of column 7 and lines 1-5 of column 8).

With respect to claim 38, Jones discloses a process where the thickness of the outer layer of the intermediate transfer material on the final recording substrate is on average calculated to be about 0.8 nanometers (refer to lines 66-67 of column 7 and lines 1-7 of column 8), which is within the claimed range of at least about 0.1 nanometers.

With respect to claim 39, Jones discloses a process where the thickness of the outer layer of the intermediate transfer material on the final recording substrate can vary from about 0.01 microns to about 50 microns (refer to lines 37-44 of column 8), which is within the claimed range of at

least about 1 nanometer. It should be noted also that the mention of a final recording substrate being on average calculated to be about 0.8 nanometers, as stated by Jones (refer to lines 66-67 of column 7 and lines 1-7 of column 8), would also sufficiently meet the criteria range.

With respect to claim 40, Jones discloses a process where the thickness of the outer layer of the intermediate transfer material on the final recording substrate is on average calculated to be about 0.8 nanometers (refer to lines 66-67 of column 7 and lines 1-7 of column 8), which is within the claimed range of no more than about 100 nanometers.

With respect to claim 41, Jones where the thickness of the outer layer of the intermediate transfer material on the final recording substrate can vary from about 0.01 microns to about 50 microns (refer to lines 37-44 of column 8), which covers the claimed range of no more than about 10 nanometers. It should be noted also that the mention of a final recording substrate being on average calculated to be about 0.8 nanometers, as stated by Jones (refer to lines 66-67 of column 7 and lines 1-7 of column 8), would also sufficiently meet the criteria range.

With respect to claims 42-47, Jones discloses a process wherein the mass of the outer layer of intermediate transfer material on the final recording substrate is at least about 0.1 milligrams per page, at least about 0.5 milligrams per page, at least about 1 milligram per page, at least about 200 milligrams per page, at least about 50 milligrams per page, and at least about 10 milligrams per page (refer to lines 7-12 of column 8).

With respect to claims 48-55, Jones teaches the transferring of a quantity of the intermediate transfer material to the final recording substrate; however, they fail to teach a curing station for curing of the intermediate transfer material on the final substrate. Titterington teaches the curing of the intermediate transfer material on the final substrate (refer to lines 1-11 of column 6, lines 1-11 of column 9, and lines 36-48 of column 10). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones for the curing of the intermediate transfer material on the final substrate, as taught by Titterington, for the purpose of improved image quality. Further with respect to Titterington, Titterington teaches the use of ultraviolet radiation, infrared radiation, visible light, or e-beam radiation for curing. Therefore, it would further be obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones for the curing of the intermediate transfer material on the final substrate by means of radiation – such as ultraviolet, infrared, visible light, or e-beam, as taught by Titterington, for the purpose of improved image quality and effective curing. Though Jones as modified by Titterington teaches the curing of the intermediate transfer material on the final substrate, a curing by means of a curing station is not mentioned – though this would be obvious to one skilled in the art in order to provide curing. Korem teaches a curing station for curing purposes (refer to element 218 of Fig. 6 and lines 49-53 of column 11). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing apparatus of Jones as modified by Titterington would allow the transferring of a quantity of the intermediate transfer material to the final recording substrate and a curing station to cure at least one reactive material in the intermediate transfer material on the final substrate, as taught by Korem, for the purpose of

improved image quality. Further, *the printing process is rejected based on the functions provided by the apparatus.*

With respect to claims 65-71, *the printing process is rejected based on the functions provided by the apparatus.*

Also, with respect to claim 68, Jones teaches the heating of the intermediate transfer member to a temperature of no more than about 120°C (refer lines 53-65 of column 9).

Also, with respect to claim 69, Jones teaches the heating of the intermediate transfer member to a temperature of no more than about 100°C (refer lines 53-65 of column 9).

Also, with respect to claim 70, Jones teaches the heating of the intermediate transfer member to a temperature of no more than about 80°C (refer lines 53-65 of column 9).

Also, with respect to claim 71, Jones teaches the heating of the intermediate transfer member to a temperature of no more than about 70°C (refer lines 53-65 of column 9).

With respect to claim 83, Jones teaches that a marking material applicator that employs a piezoelectric ink jet printing process (refer to lines 41-53 of column 15). Further, *the printing process is anticipated based on the functions provided by the apparatus.*

With respect to claim 92, Jones discloses a process that involves the transfer of intermediate transfer material to both the image areas and in nonimage areas (refer to lines 17-26 of column 8).

With respect to claims 93 and 94, Jones discloses a process where the transfer of the intermediate transfer material to the final recording substrate enables control of the gloss and transparency characteristics of the final recording substrate (refer to lines 32-49 of column 10).

With respect to claim 95, Jones does not specifically mention that a final recording substrate has two major surfaces, but Jones does refer to a recording substrate being a "plain paper" (refer to lines 27-36 of column 8), which is known to ones skilled in the art to have two major surfaces. Further, Jones does not specifically mention that a marking material is transferred from the intermediate transfer member to only one of the major surfaces, but Jones does refer to an intermediate transfer surface (a singular drum) that presses an ink image to the final receiving surface (a singular reference to one side) and demonstrates a single path for application to only one major surface as evident in Figure 1 by element 28. Therefore, it would have been obvious to one having skill in the art at the time the invention was made to utilize a printing process where the final recording substrate has two major surfaces and the marking material is transferred from the intermediate transfer member to only one of the major surfaces of a substrate, as taught by Jones, as it is well-known and recognized in the art to utilize an intermediate transfer member for the purpose of applying an image to only one side of a substrate.

14. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Hanna (20040059046), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 49 above, and further in view of Shinkoda (US20030038871).

- Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) teaches the transferring of a quantity of the intermediate transfer material to the final recording substrate and a curing station to cure at least one reactive material in the intermediate transfer material on the final substrate
- But, Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) does not specifically teach the use of heat as the radiation for curing.
- Shinkoda teaches the use of heat as the radiation for curing (refer to paragraph 0067 of page 6).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing process of Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) for the use of heat as the radiation for curing, as taught by Shinkoda, for the purpose of improved image quality and having an alternative means of curing. Further, *the printing process is anticipated based on the functions provided by the apparatus.*

15. Claim 60 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Hanna (20040059046), Titterington

(US5645888), and Korem (US6354701B2), as applied to the claim 36 above, in view of Bui (US5389958).

- Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) teaches a printing process where the applicator can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a certain thickness.
- But, Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) does not specifically mention a thickness of no more than about 60 microns – though mention of a thickness of about 50 microns would sufficiently meet the criteria range.
- Bui teaches an applicator that can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of no more than about 60 microns (refer to lines 38-55 of column 5).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing process of Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) with Bui so that an applicator can be configured to apply the molten layer of intermediate transfer material on the intermediate transfer member to a thickness of no more than about 60 microns, as taught by Bui, for the purpose of improved image quality. Further, *the printing process is anticipated based on the functions provided by the apparatus.*

16. Claims 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Hanna (20040059046), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 36 above, in view of Askren (US20040246318).

- Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) teaches a printing process with a molten layer of intermediate transfer material on the intermediate transfer member.
- However, Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) does not specifically mention that the layer is applied through heating the intermediate transfer material.
- Askren teaches an applying of a layer to the intermediate transfer member by the heating of the intermediate transfer material (refer to paragraph [0107] of page 9).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing process of Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) with an applying of the molten layer of the intermediate transfer material to the intermediate member through heating of the intermediate transfer material, as taught by Askren, for the purpose of providing easy application of the transfer material to the transfer member.

Further, with respect to claim 64, it would have been obvious to one having skill in the art at the time of the invention was made to modify the process of Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) to include heating of the intermediate transfer member and bringing of

the intermediate transfer material block into contact with the intermediate transfer member, as taught by Askren (refer to paragraph [0107] of page 9, paragraph [0083] of page 6, and paragraph [0099] of page 8), for the purpose of providing easy application of the transfer material to the transfer member.

17. Claims 75 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Hanna (20040059046), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 36 above, in view of Titterington (US5958169).

- Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) teaches a printing process that involves heating a final recording substrate.
- But, Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) does not specifically mention a printing process that involves heating a final recording substrate to a temperature of no more than about 80 °C or of no more than about 70 °C.
- Titterington teaches a printing process that involves heating a final recording substrate to a temperature between about 50 °C and about 200 °C (refer to lines 40-46 of column 8), which range covers the claimed range/limitations.
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing process of Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) with a printing process that involves heating a final recording substrate to a temperature of no more than about 80 °C

or of no more than about 70 °C, as taught by Titterington, for the purpose of setting appropriate upper limits for the heating of the final recording substrates as needed depending on the ink composition and intermediate material composition applied to the substrate.

18. Claims 85 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Hanna (20040059046), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 36 above, in view of Askren (US20040246318).

- Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) teaches a printing process that involves supplying an intermediate transfer material to form a molten layer on an intermediate transfer member.
- However, Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) does not specifically mention that the intermediate transfer material is a block or that a layer is applied through heating the intermediate transfer material onto the surface of the intermediate transfer member.
- Askren teaches an applying of a layer to the intermediate transfer member by the heating of the intermediate transfer material and that the intermediate transfer material is a block/stick (refer to element 60 of Fig. 5A to Fig. 6 and paragraphs [0099] of page 8, [0106] of page 9, and [0107] of page 9).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing process of Jones (as modified by

Fujishiro, Hanna, Titterington, and Korem) so that a block supplies the intermediate transfer material and the applying of the molten layer of intermediate transfer material comprises melting a portion of the block of intermediate transfer material onto the surface of the intermediate transfer member, as taught by Askren, for the purpose of providing easy application of the transfer material to the transfer member.

Further, with respect to claim 86, it would have been obvious to one having skill in the art at the time of the invention was made to modify the process of Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) to additionally include the conforming of a surface of the block of intermediate transfer material substantially in shape to that of a intermediate transfer member, as taught by Askren (refer to element 60 of Fig. 7 and Fig. 8), for the purpose of providing conformal coverage and application on an intermediate transfer member.

19. Claim 91 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Hanna (20040059046), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 36 above, in view of Askren (US20040246318).

- Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) teaches a printing process that involves the transfer of intermediate transfer material to both the image areas and in nonimage areas.

- However, Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) does not specifically mention that the intermediate transfer material is applied only in image areas of the final recording substrate.
- Askren teaches an applying of an intermediate transfer material layer to the intermediate transfer member to the entire width of an imaging area or a fraction of the entire width of the imaging area (refer to paragraph [0077] of page 5).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify the printing process of Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) so that the intermediate transfer material is applied only in image areas of the final recording substrate, as taught by Askren, for the purpose of conserving the intermediate transfer material.

20. Claim 96 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US5805191) in view of Fujishiro (US6295438), Hanna (20040059046), Titterington (US5645888), and Korem (US6354701B2), as applied to the claim 36 above, in view of Hindman (US5614933).

- Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) does not specifically mention that a final recording substrate has two major surfaces, but Jones (as modified by Fujishiro, Hanna, Titterington, and Korem) does refer to a recording substrate being a "plain paper" (refer to lines 27-36 of column 8 in Jones), which is known to ones skilled in the art to have two major surfaces. Jones (as modified by Fujishiro, Hanna, Titterington, and Korem), however, fails

to teach a process involving a marking material that is transferred from the intermediate transfer member to both of the major surfaces.

- Hindman teaches a process involving a marking material that is transferred from the intermediate transfer member to only both of the major surfaces, which occurs in a duplex printing process (refer to lines 1-4 of column 16).
- Therefore, it would have been obvious to one having skill in the art at the time the invention was made to utilize a printing process where the final recording substrate has two major surfaces and the marking material is transferred from the intermediate transfer member to both of the major surfaces of a substrate, as taught by Hindman, for the purpose of providing double-sided printing capability as is needed in publishing of books, magazines, etc.

Response to Arguments

21. Applicant's arguments with respect to claims 1 to 96 have been considered but are moot in view of the new ground(s) of rejection necessitated by applicant's amendment.

22. With respect to applicant's argument regarding the Fujishiro reference (US6295438), the Office still deems the reference appropriate for the purpose of establishing known ways of applying a layer of material to a drum/substrate/transfer member – which has a marking material applied subsequent to the layer application. It should be noted that the argument with respect to systems of electrophotography printing, as in the case of Fujishiro, being non-analogous is not persuasive as those skilled in the art of printing would be familiar with and motivated to utilize known transfer materials or known ways of applying a layer of material to a

drum/substrate/transfer member as noted in Fujishiro. Thus, it is the stand of the Office that one would be motivated to incorporate block of material for applying a layer to a drum/substrate/transfer member, as taught by Fujishiro, and it would be obvious to ones skilled in the art to combine Jones with Fujishiro.

23. In response to applicant's argument (for claims dependent on claim 1) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a transfer material having a melting point of at least about 30°C and no more than about 90°C) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

24. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos A. Martinez whose telephone number is (571) 272-8349. The examiner can normally be reached on 8:30 am - 5:00 pm (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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09/07/2006

Hai Phan

HAI PHAM
PRIMARY EXAMINER